

Description of emission	Necessary bandwidth		Designation of emission
	Formula	Sample calculation	
Quadrature Amplitude Modulation (QAM).	$B_n = 2R/\log_2 S$	64 QAM used to send 135 Mbps has the same necessary bandwidth as 64-PSK used to send 135 Mbps; $R = 135 \times 10^6$ bps; $S = 64$; $B_n = 45$ MHz	45M0W
Minimum Shift Keying ...	2-ary: $B_n = R(1.18)$ 4-ary: $B_n = R(2.34)$	Digital modulation used to send 2 megabits per second using 2-ary minimum shift keying $R = 2.36 \times 10^6$ bps; $B_n = 2.36$ MHz	2M36G1D

[28 FR 12465, Nov. 22, 1963, as amended at 37 FR 8883, May 2, 1972; 37 FR 9996, May 18, 1972; 48 FR 16492, Apr. 18, 1983; 49 FR 48698, Dec. 14, 1984; 68 FR 68543, Dec. 9, 2003]

Subpart D—Call Signs and Other Forms of Identifying Radio Transmissions

AUTHORITY: Secs. 4, 5, 303, 48 Stat., as amended, 1066, 1068, 1082; 47 U.S.C. 154, 155, 303.

§ 2.301 Station identification requirement.

Each station using radio frequencies shall identify its transmissions according to the procedures prescribed by the rules governing the class of station to which it belongs with a view to the elimination of harmful interference and the general enforcement of applicable radio treaties, conventions, regulations, arrangements, and agreements in force, and the enforcement of the Communications Act of 1934, as amended, and the Commission's rules.

[34 FR 5104, Mar. 12, 1969]

§ 2.302 Call signs.

The table which follows indicates the composition and blocks of international call signs available for assignment when such call signs are required by the rules pertaining to particular classes of stations. When stations operating in two or more classes are authorized to the same licensee for the same location, the Commission may elect to assign a separate call sign to each station in a different class. (In addition to the U.S. call sign allocations listed below, call sign blocks AAA through AEZ and ALA through ALZ have been assigned to the Department of the Army; call sign block AFA through AKZ has been assigned to the Department of the Air Force; and call sign block NAA through NZZ has been assigned jointly to the Department of the Navy and the U.S. Coast. Guard.

Class of station	Composition of call sign	Call sign blocks
Coast (Class I) except for coast telephone in Alaska.	3 letters	KAA through KZZ. WAA through WZZ.
Coast (Classes II and III) and maritime radio-determination.	3 letters, 3 digits	KAA200 through KZZ999. WAA200 through WZZ999.
Coast telephone in Alaska	3 letters, 2 digits. 3 letters, 3 digits (for stations assigned frequencies above 30 MHz).	KAA20 through KZZ99. WAA20 through WZZ99. WZZ200 through WZZ999.
Fixed	3 letters, 2 digits	KAA20 through KZZ99.
	3 letters, 3 digits (for stations assigned frequencies above 30 MHz).	WAA20 through WZZ99. WAA200 through WZZ999.
Marine receiver test	3 letters, 3 digits (plus general geographic location when required).	KAA200 through KZZ999. WAA200 through WZZ999.
Ship telegraph	4 letters ¹	KAAA through KZZZ. WAAA through WZZZ.
Ship telephone	2 letters, 4 digits, or 3 letters, 4 digits ¹	WA2000 through WZ9999, through WZZ9999.
Ship telegraph plus telephone	4 letters	KAAA through KZZZ. WAAA through WZZZ.
Ship radar	Same as ship telephone and/or telegraph call sign, or, if ship has no telephone or telegraph: 2 letters, 4 digits, or 3 letters, 4 digits.	WA2000 through WZ9999, through WZZ9999.

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Class of station	Composition of call sign	Call sign blocks
Ship survival craft	Call sign of the parent ship followed by 2 digits.	KAAA20 through KZZZ99. WAAA20 through WZZZ99.
Cable-repair ship marker buoy	Call sign of the parent ship followed by the letters "BT" and the identifying number of the buoy.	
Marine utility	2 letters, 4 digits	KA2000 through KZ9999.
Shipyards mobile	2 letters, 4 digits	KA2000 through KZ9999.
Aircraft telegraph	5 letters	KAAAA through KZZZZ. WAAAA through WZZZZ.
Aircraft telegraph and telephone	5 letters ²	KAAAA through KZZZZ. WAAAA through WZZZZ.
Aircraft telephone	5 letters ² (whenever a call sign is assigned).	KAAAA through KZZZZ. WAAAA through WZZZZ.
Aircraft survival craft	Whenever a call sign ² is assigned, call sign of the parent aircraft followed by a single digit other than 0 or 1.	
Aeronautical	3 letters, 1 digit ²	KAA2 through KZZ9. WAA2 through WZZ9.
Land mobile (base)	3 letters, 3 digits	KAA200 through KZZ999. WAA200 through WZZ999
Land mobile (mobile telegraph)	4 letters, 1 digit	KAAA2 through KZZZ9. WAAA2 through WZZZ9.
Land mobile (mobile telephone)	2 letters, 4 digits	KA2000 through KZ9999. WA2000 through WZ9999
Broadcasting (standard)	4 letters ³ (plus location of station)	KAAA through KZZZ. WAAA through WZZZ.
Broadcasting (FM)	4 letters (plus location of station)	KAAA through KZZZ. WAAA through WZZZ.
Broadcasting with suffix "FM"	6 letters ³ (plus location of station)	KAAA-FM through KZZZ-FM. WAAA-FM through WZZZ-FM.
Broadcasting (television)	4 letters (plus location of station)	KAAA through KZZZ. WAAA through WZZZ.
Broadcasting with suffix "TV"	6 letters ³ (plus location of station)	KAAA-TV through KZZZ-TV. WAAA-TV through WZZZ-TV.
Television broadcast translator	1 letter—output channel number—2 letters.	K02AA through K83ZZ. W02AA through W83ZZ.
Disaster station, except U.S. Government	4 letters, 1 digit	KAAA2 through KZZZ9. WAAA2 through WZZZ9.
Experimental (letter "X" follows the digit)	2 letters, 1 digit, 3 letters	KA2XAA through KZ9XZZ. WA2XAA through WZ9XZZ.
Amateur (letter "X" may not follow digit)	1 letter, 1 digit, 1 letter ⁴	K1A through K0Z. N1A through N0Z. W1A through W0Z.
Amateur	1 letter, 1 digit, 2 letters ⁴	K1AA through K0ZZ. N1AA through N0ZZ. W1AA through W0ZZ.
Do	1 letter, 1 digit, 3 letters ⁴	K1AAA through K0ZZZ. N1AAA through N0ZZZ. W1AAA through W0ZZZ.
Do	2 letters, 1 digit, 1 letter ⁴	AA1A through AIOZ. KA1A through KZOZ. NA1A through NZOZ. WA1A through WZOZ.
Do	2 letters, 1 digit, 2 letters ⁴	AA1AA through ALOZZ. KA1AA through KZOZZ. NA1AA through NZOZZ. WA1AA through WZOZZ.
Amateur (letter "X" may not follow digit)	2 letters, 1 digit, 3 letters ⁴	AA1AAA through ALOZZZ. KA1AAA through KZOZZZ. NA1AAA through NZOZZZ. WA1AAA through WZOZZZ.
Standard frequency	WWV, WWVB through WWVI, WWVL, WWVS.
Personal radio	3 letters, 4 digits, or 4 letters, 4 digits.	KAA0001 through KZZ9999, WAA0001 through WPZ9999, KAAA0001 through KZZZ9999.
Personal radio, temporary permit	3 letters, 5 digits	KAA00000 through KZZ99999.
Personal radio in trust territories	1 letter, 4 digits	K0001 through K9999.
Business radio temporary permit	2 letters, 7 digits	WT plus local telephone number.
Part 90 temporary permit	2 letters, 7 digits	WT plus local telephone number.
Part 90 conditional permit	2 letters, 7 digits	WT plus local telephone number.
General Mobile Radio Service, temporary permit.	2 letters, 7 digits	WT plus business or residence telephone number.

NOTE: The symbol 0 indicates the digit zero.

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¹ Ships with transmitter-equipped survival craft shall be assigned four letter call signs.
² See § 2.303.
³ A 3 letter call sign now authorized for and in continuous use by a licensee of a standard broadcasting station may continue to be used by that station. The same exception applies also to frequency modulation and television broadcasting stations using 5 letter call signs consisting of 3 letters with the suffix “FM” or “TV”.
⁴ Plus other identifying data as may be specified.

[34 FR 5104, Mar. 12, 1969; as amended at 54 50239, Dec. 5, 1989]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 2.302, see the List of CFR Sections Affected in the Finding Aids section of this volume.

§ 2.303 Other forms of identification of stations.

(a) The following table indicates forms of identification which may be used in lieu of call signs by the specified classes of stations. Such recognized means of identification may be one or more of the following: name of station, location of station, operating agency, official registration mark,

flight identification number, selective call number or signal, selective call identification number or signal, characteristic signal, characteristic of emission or other clearly distinguishing form of identification readily recognized internationally. Reference should be made to the appropriate part of the rules for complete information on identification procedures for each service.

<i>Class of station</i>	<i>Identification, other than assigned call sign</i>
Aircraft (U.S. registry) telephone	Registration number preceded by the type of the aircraft, or the radiotelephony designator of the aircraft operating agency followed by the flight identification number.
Aircraft (foreign registry) telephone	Foreign registry identification consisting of five characters. This may be preceded by the radiotelephony designator of the aircraft operating agency or it may be preceded by the type of the aircraft.
Aeronautical	Name of the city, area, or airdrome served together with such additional identification as may be required.
Aircraft survival craft	Appropriate reference to parent aircraft, e.g., the air carrier parent aircraft flight number or identification, the aircraft registration number, the name of the aircraft manufacturer, the name of the aircraft owner, or any other pertinent information.
Ship telegraph	When an official call sign is not yet assigned: Complete name of the ship and name of licensee. On 156.65 MHz: Name of ship. Digital selective call.
Ship telegraph	Digital selective call.
Public coast (radiotelephone) and Limited Coast (Radiotelephone)	The approximate geographic location in a format approved by the Commission.
Public coast (radiotelegraph)	Coast station identification number.
Fixed	Coast station identification number.
Fixed: Rural subscriber service	Geographic location. When an approved method of superimposed identification is used, QTT DE (abbreviated name of company or station).
Land mobile: Public safety, forestry conservation, highway maintenance, local government, shipyard, land transportation, and aviation services	Assigned telephone number.
Land mobile: Industrial service	Name of station licensee (in abbreviated form if practicable), or location of station, or name of city, area, or facility served. Individual stations may be identified by additional digits following the more general identification.
Land mobile: Domestic public and rural radio	Mobile unit cochannel with its base station: Unit identifier on file in the base station records. Mobile unit not cochannel with its base station: Unit identifier on file in the base station records and the assigned call sign of either the mobile or base station. Temporary base station: Unit designator in addition to base station identification.
Land mobile: Railroad radio service	Special mobile unit designation assigned by licensee or by assigned telephone number.
Land mobile: Broadcasting (remote pickup)	Name of railroad, train number, caboose number, engine number, or name of fixed wayside station or such other number or name as may be specified for use of railroad employees to identify a specific fixed point or mobile unit. A railroad's abbreviated name or initial letters may be used where such are in general usage. Unit designators may be used in addition to the station identification to identify an individual unit or transmitter of a base station.
Broadcasting (Emergency Broadcast System)	Identification of associated broadcasting station.
Broadcasting (aural STL and intercity relay) ...	State and operational area identification.
Broadcasting (television auxiliary)	Call sign of the broadcasting station with which it is associated.
Broadcasting (television booster)	Call sign of the TV broadcasting station with which it is licensed as an auxiliary, or call sign of the TV broadcasting station whose signals are being relayed, or by network identification.
	Retransmission of the call sign of the primary station.